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GUIDELINES for CLASSIFYING
PRODUCTION UNITS
AS REQUIRED by the MASSACHUSETTS
TOXICS USE REDUCTION ACT

COLLECTION

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UNIVERSITY OF MASSACHUSETTS
DEPARTMENT OF

INTRODUCTION

These guidelines are being published by the Massachusetts Department of Environmental Protection (DEP) as required by the Massachusetts Toxics Use Reduction Act ("TURA", M.G.L. c.211, part of Chapter 265 of the Acts of 1989). The guidelines discuss the process of designating production units and of classifying them in reporting to DEP as required under TURA.

DESIGNATING PRODUCTION UNITS

To perform the planning and reporting required by TURA, "Large Quantity Toxics Users" must first identify and classify production units for which the facility will have to plan and report, and should begin collecting chemical use and production data on these production units in early 1990. (See Attachment B for those sections of TURA that define "Large Quantity Toxics User", and discuss the production unit as the basic unit for planning and reporting.) Facilities are encouraged to designate production units in the manner most useful for identifying toxics use reduction opportunities, so long as this designation meets the basic requirements of the law.

Basic Legal Requirements. For the actual language in TURA that defines "production unit" see Attachment C. The most important concepts here are that:

- A "production unit" is in general a process (which may consist of several steps) used to produce a product or family of products (In fact, as will be discussed below, each production unit must be classified as a combination of a product with a process.)
- Each "production unit" includes (a) the storage and handling of the input materials at the front end, (b) the processing or use of the materials, and (c) the handling of the finished products at the back end.
- Separate or parallel processes used to produce the same type of product should be considered separate production units.
- Similar products may be classified into a "family of products", so that a process used to produce a family of products can be considered one production unit. Moreover, facilities may choose to divide a family into different products associated with the same process if their use toxic materials differs significantly.
- "Intermediate products" shall be considered products for the purpose of classifying production units. Intermediate products include, but are not limited to, any product or result that is put through a separate finishing step, is stored, or is transferred to another production unit or off-site.

Usefulness in toxics use reduction analysis. A facility should designate production units in a way that is most useful for assessing chemical use and planning for toxics use reduction (so long as the designation is consistent with the TURA

definitions listed in Attachment C). Some facilities may have already done much of the work needed to identify production units in the course of:

- engaging in current toxics use reduction activity;
- preparing to comply with the "SARA 313" requirements (Federal Superfund Amendments and Reauthorization Act of 1986, Section 313);
- preparing plans for approval under air or water pollution control regulations;
- preparing reports required under air or water pollution control regulations (e.g. Source Registration reports for DEP's Division of Air Quality Control)
- planning for facility upgrading; or
- developing management systems (e.g. designating cost centers).

Some of this work may be useful for identifying chemical use patterns and costs, or may be currently used in the facility's management systems. DEP encourages facilities to draw upon or modify this work in designating production units, so long as the end result of analysis, or final designation is consistent with the law.

CLASSIFYING PRODUCTION UNITS

Facilities will be required to report certain information about each production unit in which a toxic substance is manufactured, processed, or otherwise used, including:

- the classification of the production unit;
- the amount of toxic substance used;
- a byproduct reduction index detailing reductions in toxics generated as byproducts;
- an emissions reduction index detailing reductions in emissions; and
- a matrix form indicating the methods by which any reductions were achieved.

Within the next year DEP will be developing the form (including the matrix) for reporting this information, and will promulgate it in regulations (See Attachment B for the TURA language on these reports).

DEP will require facilities to classify each production unit in terms of both (a) the products produced by the production unit and (b) the process by which the product was produced. The product and process for each production unit should be categorized by using the following protocol:

Product:

- 1) If the product or family of products can be adequately described with a 4-digit Standard Industrial Classification (SIC) code (or a group of SIC codes), use this code (or codes).

(NOTE: Standard Industrial Classification (SIC) codes are developed by the Federal Executive Office of Management and Budget to categorize industries according to the products they produce. If you are not familiar with the SIC codes that apply to the products produced by your facility, contact your trade association, chamber of commerce, or legal counsel. See Attachment E for the SIC codebook).

- 2) If the product is not adequately described by any SIC code, then use a

product category from any classification scheme currently used in industry (e.g. by trade groups, vendors, trade publications), include the reference to that classification scheme, and list the closest SIC code (See Attachment E).

3) If the product is adequately described by neither the SIC system nor any existing classification scheme, then describe the product in prose and use the closest SIC code.

Process:

1) If the process can be adequately described by a process category listed on one of the lists in the DEP guidelines, (See Attachment F) use that process category.

2) If the process does not fit into any of the process categories listed in the DEP guidelines, use a process category from any classification scheme currently used in industry, (e.g. by trade groups, vendors, trade publications), and include the reference to that classification scheme.

3) If the process is not adequately described by any known classification scheme, describe process in prose.

For an illustration of how a firm might designate its production units, classify them and prepare for the TURA reporting requirements see Attachment D. With further questions call:

- the Toxics Use Reduction Information Line at the Massachusetts Department of Environmental Protection: 617-292-5652;
- the Office of Safe Waste Management at the Massachusetts Department of Environmental Management: 617-727-3260;
- your trade association.

ATTACHMENT A OVERVIEW OF THE MASSACHUSETTS TOXICS USE REDUCTION ACT

The Massachusetts Toxics Use Reduction Act (TURA), jointly supported by the Associated Industries of Massachusetts, the Massachusetts Public Interest Research Group, and other groups was passed unanimously by both the houses of the State Legislature, and was signed into law by Governor Dukakis on July 24, 1989.

The essential goal of the law is to promote "toxics use reduction". The Legislature elaborated on this, saying:

...the policy goals of this act shall be:

1. To establish for the commonwealth a statewide goal of reducing toxic waste generated by fifty percent (50%) by the year 1997 using toxics use reduction as the means of meeting this goal.
2. To establish toxics use reduction as the preferred means for achieving compliance with any federal or state law or regulation pertaining to toxics production and use, hazardous waste, industrial hygiene, worker safety, public exposure to toxics, or releases of toxics into the environment and for minimizing the risks associated with the use of toxic or hazardous substances and the production of toxic or hazardous substances or hazardous wastes;
3. To sustain, safeguard and promote the competitive advantage of Massachusetts businesses, large and small, while advancing innovation in toxics use reduction and management;
4. To promote reductions in the production and use of toxic and hazardous substances within the commonwealth, both through the programs established in section three of this Act and through existing toxics-related state programs;
5. To enhance and strengthen the enforcement of existing environmental laws and regulations within the commonwealth; and
6. To promote coordination and cooperation between all state departments and agencies administering toxics-related programs.

OVERVIEW OF THE TOXICS USE REDUCTION ACT

"Toxics Use Reduction" is defined in the law as:

In-plant changes in production processes or raw materials that reduce, avoid, or eliminate the use of toxic or hazardous substances or generation of hazardous byproducts per unit of product, so as to reduce risks to the health of workers, consumers, or the environment, without shifting risks between workers, consumers, or parts of the environment. Toxics use reduction shall be achieved through any of the following techniques:

1. Input substitution, which refers to replacing a toxic or hazardous substance or raw material used in a production unit with a non-toxic or less toxic substance;
2. Product reformulation, which refers to substituting for an existing end-product an end-product which is non-toxic or less toxic upon use, release or

disposal;

3. Production unit redesign or modification, which refers to developing and using production units of a different design than those currently used;
4. Production unit modernization, which refers to upgrading or replacing existing production unit equipment and methods with other equipment and methods based on the same production unit;
5. Improved operation and maintenance of production unit equipment and methods which refers to modifying or adding to existing equipment or methods including, but not limited to, such techniques as improved housekeeping practices, system adjustments, product and process inspections, or production unit control equipment or methods; or
6. Recycling, reuse, or extended use of toxics by using equipment or methods which become an integral part of the production unit of concern, including but not limited to filtration and other closed loop methods.

Toxics use reduction focuses on the production process, rather than on the end-waste (called in TURA, "byproduct"). In other words, "reduction" is to occur through changes in the production process, rather than through changes in how the waste generated by the production process is handled. Thus, according to TURA, toxics use reduction does not include:

- any practice which promotes or requires incineration, or which actually is incineration;
- any practice which promotes or results in shifting the toxic discharge from one medium to another (like shifting a discharge from air to water);
- any practice which promotes, requires, or actually is recycling, unless it is integral to the production process; and
- any practice which promotes, requires or actually is treatment of toxic waste to make it less toxic or non-toxic.

The act could be characterized as having two phases, the second of which may require more regulatory involvement in toxics use performance standards than the first.

In the first phase of the Act, from September 24, 1989 (the effective date of the Act) through June 30, 1995, the Commonwealth is mandated to assist industry; to request from industry information intended to be useful both for firms seeking toxics use reduction opportunities and for public decision-makers; and to otherwise create a regulatory environment for industry that is more supportive of investment in toxics use reduction. In other words, the commonwealth is not mandated to take a "command-and-control" approach to promoting toxics use reduction in this first phase. Note, however, that the Department is directed to require violators of other environmental laws to use Toxics Use Reduction, wherever practicable, as the means of coming into compliance.

Specifically the Act:

- establishes an Office of Toxics Use Reduction Assistance and Technology, which provides technical assistance to industrial toxics users (Section 7).
- establishes a Toxics Use Reduction Institute at the University of Lowell, which develops training programs for toxics users, toxics use reduction planners (see below) and others involved in toxics use reduction; engages in research, development, and demonstration of toxics use reduction methods; may train DEP employees; and conducts a study on the restriction of chemical use in the commonwealth.
- requires "Large Quantity Toxic Users" (initially the same group of firms reporting under SARA 313, but expanding each year through 1995 to include firms classified in other SIC groups and which use chemicals on the "CERCLA" list (CERCLA 101(14) and (102)) to develop an inventory of chemicals inputs and outputs of each production process at a facility, and to develop a toxics use reduction plan for each such production process at a facility. Note that the planning requirement is intended as a "self-help" provision -- it is hoped that through the process of planning, firms will identify more efficient production methods that will both prevent pollution and save money. The plans are certified by "Toxics Use Reduction Planners" who have themselves passed a uniform certification examination developed by DEP. The "Large Quantity Toxics Users" send DEP the inventory, and a summary of the plan which includes a projection of the facility's future reduction in toxic emissions and use. DEP reports a comparison of the aggregated reduction with the statewide "50% by 1997" reduction goal.
- establishes an Administrative Council on Toxics Use Reduction, on which sit representatives of DEP, the three cabinet-level executive office of Environmental Affairs, Economic Affairs, and Labor, the Department of Public Health, and the Office of Science and Technology. This Council is advised by an Advisory Board which includes representatives of industry, environmental groups, and health organizations. The Council's responsibilities include recommending to the governor the allocation of the Toxics Use Reduction Fund, and, after July 1, 1995, designating certain industry groups as "Priority User Segments".

The second phase of the implementation of the Act starts on July 1, 1995, after which the Council, presumably in consideration of the effectiveness of the technical assistance and self-help approach of the first phase, has authority to designate certain industry groups as Priority User Segments. Among other things, once a group of firms is so designated, DEP can require firms otherwise exempt because of the low volume of their chemical usage or their small size, to comply with the reporting and planning requirements mentioned above, and in certain cases can impose performance standards. In imposing a performance standard on a group of firms, DEP will be requiring the firms to achieve a specified level of byproduct quantity generated per

unit of product, so long as the level is based on a reasonably proven public domain technologies or industry practices applicable to that industry group. DEP may also in certain cases impose a Performance Standard on an individual firm through an administrative order.

ATTACHMENT B

THE IMPORTANCE OF THE PRODUCTION UNIT CLASSIFICATION SCHEME

As the following citations demonstrate, the "production unit" is the basis for toxic use reduction planning, and reporting, and for setting performance standards, should the need arise. (These citations are paraphrased or abridged for clarity of presentation. See the Act itself for the full text.)

Reporting

Section 10(C)(1) Each report [filed with DEP annually by all large quantity toxics users] shall also include for each production unit at the large quantity toxics user's facility in which the toxic or hazardous substance is manufactured, processed, or otherwise used, the following information... (b) an indication of whether the toxic or hazardous substance was used in the production unit in amounts:

[< 5000lbs
5001 - 10,000 lbs
> 10,000 lbs]

(c) the reporting base year...

(d) a byproduct reduction index [which equals:

$$100 \times ((A-B)/A)$$

where

A = quantity of toxic byproducts generated in base year
units of product produced in base year

B = quantity of toxic byproducts generated in current year
units of product produced in current year

(e) an emissions reduction index [which equals:

$$100 \times ((A-B)/A)$$

where

quantity of emissions attributable
A = to production unit in base year
unit of product produced in base year

quantity of emissions attributable
B = to production unit in current year
unit of product produced in current year

(f) a matrix form [that may look, for example, like this:

	Input Substitution	Product Reformulation	Production Unit Redesign	Production Unit Modernization	Improved Operation & Maintenance	Byproduct as product	Miscellaneous
Materials Handling/Storage	✓				✓		
Processing Operations			✓				
Finished Goods Handling							✓

The matrix must be filled out by placing a checkmark at the intersection of the type of toxics use reduction technique utilized for any of the three designated areas of the production unit if it represents an increase in the by-product index of 5 or greater.

The headings on this matrix are actual ones prescribed by the law, while the check marks are only illustrative.]

Section 10(D)(2) (a)&(b) [Pilot production units and start-up production units are exempt from this reporting requirement.] Note that Section (C)2 requires the large quantity toxic user to maintain adequate documentation to substantiate this information.

Planning

Section 11(A)(1) Large quantity toxics users shall [by July 1, 1994, as specified in the law] prepare and complete a toxics use reduction plan for each facility for which they are required to file a report...

(3) The plan shall include for each production unit in which a covered toxic or hazardous substance is manufactured, processed or otherwise used:

(a) a comprehensive economic and technical evaluation of appropriate technologies, procedures and training programs for potentially achieving toxics use reduction for each covered toxic or hazardous substance;

(b) an analysis of current and projected toxics use, byproduct generation, and emissions;

(c) an evaluation of the types and amounts of covered toxic or hazardous substances used;

(d) an identification of the economic impacts of the use of each covered toxic or hazardous substance in the production unit, including, but not limited to, raw material and byproduct storage and handling costs, potential liability costs, and costs associated with regulation;

(e) an identification of each technology, procedure or training program to be implemented for the purposes of achieving toxics use reduction, the anticipated costs of implementation of each, and the anticipated savings expected due to each;

- (f) a schedule for implementation of such technologies, procedures and training programs;
- (g) for each covered toxic or hazardous substance a two-year and a five-year goal for the byproduct reduction index reported pursuant to section ten.

Performance Standards

Section 14 (A) Beginning on July 1, 1995, the council shall identify by regulation user segments which it considers to be priorities for achieving toxics use reduction, based on recommendations from the department and the office, and in consultation with the Institute. User segments shall include similar production units in all facilities regardless of threshold amounts. Important considerations for identifying priority user segments shall include:

Section 15. Performance Standards.

(A) The Department may request authority from the council to establish, by regulation, a performance standard for a priority user segment on a segment-wide basis. Such authority shall only be granted if:

(1) A majority of toxics users in the user segment fall significantly below regional, national or intentional achievements of byproduct generated per unit of product based on reasonably proven, public domain technologies and/or industry practices; or

(2) A number of toxics users in the user segment fall significantly below a Massachusetts-based norm for byproduct generated per unit of production based on reasonably proven, public domain technologies and/or industry practices.

(B) Each performance standard issued under subsection (a) of this section shall require large quantity toxics users within the relevant user segment to achieve a level or set of levels of byproducts generated per unit of product. Any such level shall be based on reasonably proven, public domain technologies and/or industry practices applicable to that user segment.

(C) Each performance standard issued under subsection (a) of this section shall specify a reasonable time for compliance, not to exceed three years. Any production unit covered by a performance standard shall come into compliance to the extent economically feasible. The toxics user shall maintain on-site justification for any noncompliance with the standard, or shall apply to the department for a waiver of the standard based on a showing that the standard is not economically feasible for that user.

(D) The department may establish performance standards under this section for a specific toxics user within a priority segment after considering the toxics user's efforts to reduce byproduct and emissions and the potential effectiveness of referral for technical assistance and/or proposing changes in the toxics user's reduction plan instead of establishing a performance standard, such consideration not being subject to adjudication. A standard shall be set through the issuance of an administrative order applicable to the toxics user, which may require a specified percent reduction of byproduct generated per unit of product which is cost-effective, economically and technically feasible to the toxics user and the technology for which is commercially available to the user segment. Such an administrative order shall specify a reasonable time for compliance. A toxics user for whom a performance standard is set through this

administrative order mechanism may appeal said order through the adjudicatory hearing process set forth in chapter thirty A of the General Laws.

(E) Upon the date one year after issuance of a performance standard for a user segment, the department may apply to the council for authority to extend the standard by regulation to small quantity toxics users within the relevant user segment.

(F) A production unit otherwise covered by a performance standard shall be exempt from such standard if compliance would adversely affect the toxics user's ability to produce its product in conformance with product specifications of the United States Food and Drug Administration, Department of Defense or any other federal agency.

ATTACHMENT C RELEVANT DEFINITIONS FROM THE TOXICS USE REDUCTION ACT

DEFINITION OF A PRODUCTION UNIT

The law (Section 2) gives the following definitions, among others:
(Section 2)

"Production Unit," a process, line, method, activity, or technique, or a combination or series thereof, used to produce a product.

"Product," a product, a family of products, an intermediate product, a family of intermediate products, or a desired results or a family of result.

"Intermediate Product," (a) in chemical manufacturing, any chemical substance that is consumed, in whole or in part, in chemical reactions used for the intentional manufacture of another chemical substance or mixture, or that is intentionally present for the purpose of altering the rate of chemical reactions, other than a non-isolated intermediate as defined in this chapter; (b) in any other setting, any manufactured substance, compound, or product that is consumed, in whole or in part, in a chemical or physical process for the intentional manufacture of another product, or that is intentionally present for the purpose of aiding the manufacture of another product, other than a non-isolated intermediate as defined in this chapter.

"Non-isolated Intermediate," any intermediate which is not intentionally removed from the equipment in which it is manufactured, including any reaction vessel in which it is manufactured, equipment which is ancillary to the reaction vessel or similar equipment, and any equipment through which the intermediate passes during a continuous flow process, but not including tanks or other vessels or equipment in which the substance or product is stored after manufacture.

Process: NOTE that TURA has a definition of the term "process" as a verb, referring to the act of processing (i.e. preparing a toxic substance, after its manufacture, for distribution in commerce). "Process" is used in these guidelines as a noun, referring to physical equipment or procedures by which a product is produced. These are two completely different uses of the term "process" and should not be confused.

Large Quantity Toxics User is defined in Section 2 of the law as:

Any toxics user who manufactures, processes, or otherwise uses any toxic or hazardous substance in an amount the same as or greater than the applicable threshold amount in a calendar year at a facility.

"Threshold Amounts" shall be initially established as the following:

- (a) For those toxics users that manufacture or process a toxic or hazardous substance, the threshold amount shall be twenty-five thousand pounds each year at any one facility; and
- (b) For those toxics users that otherwise use a toxic or hazardous substance, the threshold amount for a toxic or hazardous substance shall be ten thousand pounds each year at any one facility. However, if the administrator of the U.S.

E.P.A. sets a threshold quantity for facility reporting on a toxic or hazardous substance under Section 313 of EPCRA which is lower than a corresponding threshold amount specified in (a) or (b), the Department shall change the corresponding threshold for that substance under this chapter to be the same as the Federal threshold.

DEFINITION OF LARGE QUANTITY TOXICS USER

ATTACHMENT D

A SUGGESTED PROCEDURE FOR IDENTIFYING AND CLASSIFYING PRODUCTION UNITS AND PREPARING FOR THE TURA REPORTING REQUIREMENTS

This attachment outlines one method for identifying and classifying production units, and for preparing for the TURA reporting requirements. This procedure is not a requirement -- it is presented here only to be helpful.

STEP ONE: PREPARE PROCESS FLOW DIAGRAMS

Prepare process flow diagrams depicting the flow of materials (particularly the materials covered by TURA) through storage areas, processing equipment, assembly areas, final product handling areas, etc. Some facilities may have already prepared such diagrams in the course of:

- engaging in current toxics use reduction activity;
- preparing to comply with the "SARA 313" requirements (Federal Superfund Amendments and Reauthorization Act of 1986, Section 313);
- preparing plans for approval under air or water pollution control regulations;
- preparing reports required under air or water pollution control regulations (e.g. source registration reports for DEP's Division of Air Quality Control)
- planning for facility upgrading; or
- developing management systems (e.g. designating cost centers).

STEP TWO: IDENTIFY PRODUCTS

Identify the products produced by the facility, being sure to:

- group similar products into a "family of products"; and
- identify "intermediate products".

(See Page 2 of these guidelines, Attachment B, and the following examples for guidance in identifying families of products and intermediate products.)

STEP THREE: IDENTIFY PROCESS

Drawing from the process flow diagram developed in Step One identify the combination of activities (storage, handling, processing, assembling, etc.) that are used to produce each product (and remember that one family of products or one intermediate product can be considered a product for purposes of this law). Note that separate processes used to produce one type of product should be considered separate production units.

STEP FOUR: DESIGNATE PRODUCT-PROCESS COMBINATIONS AS PRODUCTION UNITS

Designate as one "production unit" the series of activities used to produce a single product, family of products, or intermediate product.

EXAMPLES

To illustrate steps two, three, and four, each of the following product-process combinations could be used to describe one production unit:

Example: Simple Product-Process Combinations

Facilities that have a single product and a single production line have one production unit.

<u>Production Unit</u>	<u>Product</u>	<u>Process</u>
#1	Aniline	From phenol by ammonolysis
#2	Cleaned clothing	Dry cleaning machine #1
#3	Cleaned rugs	Dry cleaning machine #2
#4	Motor discs	Stamping and finishing
#5	Motor cans	Plating line #1
#6	Motor control devices	Assembly
#7	Plastic resin	Acetalization

Example: Families of products

Facilities with multiple products may combine similar products into a family of products produced by a single unit.

<u>Production Unit</u>	<u>Product</u>	<u>Process</u>
#1	Copy paper, all colors	Roll coating (machine #6)
#2	Engine parts, miscellaneous	Stamping and finishing
#3	Painted appliances	Conveyorized painting (unit #5)

Example: Different products associated with the same process equipment

A single production line that makes two distinct products (not of the same family) has two product-process combinations, which are two distinct production units. Similarly, families of products can be divided into different products associated with the same process equipment, particularly if the toxic chemicals used in producing them differs.

<u>Production Unit</u>	<u>Product</u>	<u>Process</u>
#1	Microfilm	Roll coating (machine #4)
#2	Microfilm, specialty grade	Roll coating (machine #4)

Example: A sequence of production steps grouped into a single process

A sequence or combination of production steps, activities or processes may be grouped into a single process (except when a constituent step, activity or process results in a product or intermediate product).

<u>Production Unit</u>	<u>Product</u>	<u>Process</u>
#1	Desk	Assembly, Primer Coating Top Coating

Example: Intermediate products

Intermediate products include, but are not limited to, any product that, in whole or in part, is transferred off-site, to another production unit, to storage, or through a finishing process. A product or result of a production unit that is designated as a product for accounting or inventory purposes should be identified as a product for purposes of this Act.

<u>Production Unit</u>	<u>Product</u>	<u>Process</u>
#1	Painted appliance	Primer and top coating,
#2	Partially-painted appliance (given only a primer coat and stored for later finishing)	Primer coating

Example: Separate processes making the same type of product

Parallel or separate processes, lines, or combinations should be identified as different production units, whether or not they make the same product.

<u>Production Unit</u>	<u>Product</u>	<u>Process</u>
#1	Plated rings	Electroplating (line #4)
#2	Plated rings	Electroplating (line #11)

STEP FIVE: CLASSIFY PRODUCT-PROCESS COMBINATION

Using the protocol discussed in the guidelines, classify each product-process combination.

STEP SIX: DETERMINE "UNIT OF PRODUCT" BASIS

In calculating the "byproduct reduction index" and the "emissions reduction index" required by TURA (Sections 10(C)(1)(d) and (e)), facilities will have to calculate the number of "unit[s] of product produced in the reporting base year" and in the current reporting year. For some facilities this may be as easy as keeping track of the number of products produced for the year (e.g. a chair manufacturer could use the number of chairs produced that year to calculate the two reduction indices). For others, however, this might not be such a simple issue and other measures of production level should be used (e.g. surface area, volume, weight of product). The basis for calculating "units of product" should generally reflect physical measures (e.g. sales volume would not be an acceptable measure because it is affected by numerous factors that have little to do with production efficiency or toxics use).

STEP SEVEN: IDENTIFY AND BEGIN TRACKING CHEMICAL INPUTS AND OUTPUTS, AND UNITS OF PRODUCT

Identify and begin tracking material inputs and outputs (especially the chemicals covered by TURA and units of product) of each production unit. Chemicals used in maintenance and repair of a production unit equipment should be included in the unit's reporting.
(guidev5)

STANDARD INDUSTRIAL CLASSIFICATION CODES

ATTACHMENT E

The following are the SIC codes for the industries which will be subject to the Toxic Use Reduction Act. The four digit product codes are found in the Standard Industrial Classification Manual, 1987, developed by the Executive Office of Management and Budget, and available from:

National Technical Information Service
5285 Port Royal Road
Springfield, Virginia, 72161
(703) 487-4650
Publication Access # PB87-100012

More detailed codes, from five to seven digits for the mineral industry (SIC codes 10-14) and manufacturing industries (SIC Codes 20-39) can be found in the Census of Manufacturers and Mineral Industry, a Census Bureau publication available from the Government Printing Service (accesss # s/n 003-06925-3) or from major libraries.

B. MINING

<i>Code</i>	<i>Short Title</i>	<i>Code</i>	<i>Short Title</i>
10	METAL MINING	1311	Crude petroleum and natural gas
101	Iron Ores	132	Natural Gas Liquids
1011	Iron ores	1321	Natural gas liquids
102	Copper Ores	138	Oil and Gas Field Services
1021	Copper ores	1381	Drilling oil and gas wells
103	Lead and Zinc Ores	1382	Oil and gas exploration services
1031	Lead and zinc ores	1389	Oil and gas field services, nec
104	Gold and Silver Ores		
1041	Gold ores	14	NONMETALLIC MINERALS, EXCEPT FUELS
1044	Silver ores	141	Dimension Stone
106	Ferroalloy Ores, Except Vanadium	1411	Dimension stone
1061	Ferroalloy ores, except vanadium	142	Crushed and Broken Stone
108	Metal Mining Services	1422	Crushed and broken limestone
1081	Metal mining services	1423	Crushed and broken granite
109	Miscellaneous Metal Ores	1429	Crushed and broken stone, nec
1094	Uranium-radium-vanadium ores	144	Sand and Gravel
1099	Metal ores, nec	1442	Construction sand and gravel
		1446	Industrial sand
12	COAL MINING	145	Clay, Ceramic, & Refractory Minerals
122	Bituminous Coal and Lignite Mining	1455	Kaolin and ball clay
1221	Bituminous coal and lignite—surface	1459	Clay and related minerals, nec
1222	Bituminous coal—underground	147	Chemical and Fertilizer Minerals
123	Anthracite Mining	1474	Potash, soda, and borate minerals
1231	Anthracite mining	1475	Phosphate rock
124	Coal Mining Services	1479	Chemical and fertilizer mining, nec
1241	Coal mining services	148	Nonmetallic Minerals Services
		1481	Nonmetallic minerals services
13	OIL AND GAS EXTRACTION	149	Miscellaneous Nonmetallic Minerals
131	Crude Petroleum and Natural Gas	1499	Miscellaneous nonmetallic minerals

D. MANUFACTURING

<i>Code</i>	<i>Short Title</i>	<i>Code</i>	<i>Short Title</i>
20	FOOD AND KINDRED PRODUCTS	2067	Chewing gum
201	Meat Products	2068	Salted and roasted nuts and seeds
2011	Meat packing plants	207	Fats and Oils
2013	Sausages and other prepared meats	2074	Cottonseed oil mills
2015	Poultry slaughtering and processing	2075	Soybean oil mills
202	Dairy Products	2076	Vegetable oil mills, nec
2021	Creamery butter	2077	Animal and marine fats and oils
2022	Cheese, natural and processed	2079	Edible fats and oils, nec
2023	Dry, condensed, evaporated products	208	Beverages
2024	Ice cream and frozen desserts	2082	Malt beverages
2026	Fluid milk	2083	Malt
203	Preserved Fruits and Vegetables	2084	Wines, brandy, and brandy spirits
2032	Canned specialties	2085	Distilled and blended liquors
2033	Canned fruits and vegetables	2086	Bottled and canned soft drinks
2034	Dehydrated fruits, vegetables, soups	2087	Flavoring extracts and syrups, nec
2035	Pickles, sauces, and salad dressings	209	Misc. Food and Kindred Products
2037	Frozen fruits and vegetables	2091	Canned and cured fish and seafoods
2038	Frozen specialties, nec	2092	Fresh or frozen prepared fish
204	Grain Mill Products	2095	Roasted coffee
2041	Flour and other grain mill products	2096	Potato chips and similar snacks
2043	Cereal breakfast foods	2097	Manufactured ice
2044	Rice milling	2098	Macaroni and spaghetti
2045	Prepared flour mixes and doughs	2099	Food preparations, nec
2046	Wet corn milling		
2047	Dog and cat food	21	TOBACCO PRODUCTS
2048	Prepared feeds, nec	211	Cigarettes
205	Bakery Products	2111	Cigarettes
2051	Bread, cake, and related products	212	Cigars
2052	Cookies and crackers	2121	Cigars
2053	Frozen bakery products, except bread	213	Chewing and Smoking Tobacco
206	Sugar and Confectionery Products	2131	Chewing and smoking tobacco
2061	Raw cane sugar	214	Tobacco Stemming and Redrying
2062	Cane sugar refining	2141	Tobacco stemming and redrying
2063	Beet sugar		
2064	Candy & other confectionery products	22	TEXTILE MILL PRODUCTS
2066	Chocolate and cocoa products	221	Broadwoven Fabric Mills, Cotton

<i>Code</i>	<i>Short Title</i>
2211	Broadwoven fabric mills, cotton
222	Broadwoven Fabric Mills, Manmade
2221	Broadwoven fabric mills, manmade
223	Broadwoven Fabric Mills, Wool
2231	Broadwoven fabric mills, wool
224	Narrow Fabric Mills
2241	Narrow fabric mills
225	Knitting Mills
2251	Women's hosiery, except socks
2252	Hosiery, nec
2253	Knit outerwear mills
2254	Knit underwear mills
2257	Weft knit fabric mills
2258	Lace & warp knit fabric mills
2259	Knitting mills, nec
226	Textile Finishing, Except Wool
2261	Finishing plants, cotton
2262	Finishing plants, manmade
2269	Finishing plants, nec
227	Carpets and Rugs
2273	Carpets and rugs
228	Yarn and Thread Mills
2281	Yarn spinning mills
2282	Throwing and winding mills
2284	Thread mills
229	Miscellaneous Textile Goods
2295	Coated fabrics, not rubberized
2296	Tire cord and fabrics
2297	Nonwoven fabrics
2298	Cordage and twine
2299	Textile goods, nec
23	APPAREL AND OTHER TEXTILE PRODUCTS
231	Men's and Boys' Suits and Coats
2311	Men's and boys' suits and coats
232	Men's and Boys' Furnishings
2321	Men's and boys' shirts
2322	Men's & boys' underwear & nightwear
2323	Men's and boys' neckwear
2325	Men's and boys' trousers and slacks
2326	Men's and boys' work clothing
2329	Men's and boys' clothing, nec
233	Women's and Misses' Outerwear
2331	Women's & misses' blouses & shirts
2335	Women's, juniors', & misses' dresses
2337	Women's and misses' suits and coats
2339	Women's and misses' outerwear, nec
234	Women's and Children's Undergarments
2341	Women's and children's underwear
2342	Bras, girdles, and allied garments
235	Hats, Caps, and Millinery
2353	Hats, caps, and millinery

<i>Code</i>	<i>Short Title</i>
236	Girls' and Children's Outerwear
2361	Girls' & children's dresses, blouses
2369	Girls' and children's outerwear, nec
237	Fur Goods
2371	Fur goods
238	Miscellaneous Apparel and Accessories
2381	Fabric dress and work gloves
2384	Robes and dressing gowns
2385	Waterproof outerwear
2386	Leather and sheep-lined clothing
2387	Apparel belts
2389	Apparel and accessories, nec
239	Misc. Fabricated Textile Products
2391	Curtains and draperies
2392	Housefurnishings, nec
2393	Textile bags
2394	Canvas and related products
2395	Pleating and stitching
2396	Automotive and apparel trimmings
2397	Schiffli machine embroideries
2399	Fabricated textile products, nec
24	LUMBER AND WOOD PRODUCTS
241	Logging
2411	Logging
242	Sawmills and Planing Mills
2421	Sawmills and planing mills, general
2426	Hardwood dimension & flooring mills
2429	Special product sawmills, nec
243	Millwork, Plywood & Structural Members
2431	Millwork
2434	Wood kitchen cabinets
2435	Hardwood veneer and plywood
2436	Softwood veneer and plywood
2439	Structural wood members, nec
244	Wood Containers
2441	Nailed wood boxes and shooks
2448	Wood pallets and skids
2449	Wood containers, nec
245	Wood Buildings and Mobile Homes
2451	Mobile homes
2452	Prefabricated wood buildings
249	Miscellaneous Wood Products
2491	Wood preserving
2493	Reconstituted wood products
2499	Wood products, nec
25	FURNITURE AND FIXTURES
251	Household Furniture
2511	Wood household furniture
2512	Upholstered household furniture
2514	Metal household furniture

<i>Code</i>	<i>Short Title</i>
2515	Mattresses and bedsprings
2517	Wood TV and radio cabinets
2519	Household furniture, nec
252	Office Furniture
2521	Wood office furniture
2522	Office furniture, except wood
253	Public Building & Related Furniture
2531	Public building & related furniture
254	Partitions and Fixtures
2541	Wood partitions and fixtures
2542	Partitions and fixtures, except wood
259	Miscellaneous Furniture and Fixtures
2591	Drapery hardware & blinds & shades
2599	Furniture and fixtures, nec
26	PAPER AND ALLIED PRODUCTS
261	Pulp Mills
2611	Pulp mills
262	Paper Mills
2621	Paper mills
263	Paperboard Mills
2631	Paperboard mills
265	Paperboard Containers and Boxes
2652	Setup paperboard boxes
2653	Corrugated and solid fiber boxes
2655	Fiber cans, drums & similar products
2656	Sanitary food containers
2657	Folding paperboard boxes
267	Misc. Converted Paper Products
2671	Paper coated & laminated, packaging
2672	Paper coated and laminated, nec
2673	Bags: plastics, laminated, & coated
2674	Bags: uncoated paper & multiwall
2675	Die-cut paper and board
2676	Sanitary paper products
2677	Envelopes
2678	Stationery products
2679	Converted paper products, nec
27	PRINTING AND PUBLISHING
271	Newspapers
2711	Newspapers
272	Periodicals
2721	Periodicals
273	Books
2731	Book publishing
2732	Book printing
274	Miscellaneous Publishing
2741	Miscellaneous publishing
275	Commercial Printing
2752	Commercial printing, lithographic
2754	Commercial printing, gravure

<i>Code</i>	<i>Short Title</i>
2759	Commercial printing, nec
276	Manifold Business Forms
2761	Manifold business forms
277	Greeting Cards
2771	Greeting cards
278	Blankbooks and Bookbinding
2782	Blankbooks and looseleaf binders
2789	Bookbinding and related work
279	Printing Trade Services
2791	Typesetting
2796	Platemaking services
28	CHEMICALS AND ALLIED PRODUCTS
281	Industrial Inorganic Chemicals
2812	Alkalies and chlorine
2813	Industrial gases
2816	Inorganic pigments
2819	Industrial inorganic chemicals, nec
282	Plastics Materials and Synthetics
2821	Plastics materials and resins
2822	Synthetic rubber
2823	Cellulosic manmade fibers
2824	Organic fibers, noncellulosic
283	Drugs
2833	Medicinals and botanicals
2834	Pharmaceutical preparations
2835	Diagnostic substances
2836	Biological products exc. diagnostic
284	Soap, Cleaners, and Toilet Goods
2841	Soap and other detergents
2842	Polishes and sanitation goods
2843	Surface active agents
2844	Toilet preparations
285	Paints and Allied Products
2851	Paints and allied products
286	Industrial Organic Chemicals
2861	Gum and wood chemicals
2865	Cyclic crudes and intermediates
2869	Industrial organic chemicals, nec
287	Agricultural Chemicals
2873	Nitrogenous fertilizers
2874	Phosphatic fertilizers
2875	Fertilizers, mixing only
2879	Agricultural chemicals, nec
289	Miscellaneous Chemical Products
2891	Adhesives and sealants
2892	Explosives
2893	Printing ink
2895	Carbon black
2899	Chemical preparations, nec

<i>Code</i>	<i>Short Title</i>
29	PETROLEUM AND COAL PRODUCTS
291	Petroleum Refining
2911	Petroleum refining
295	Asphalt Paving and Roofing Materials
2951	Asphalt paving mixtures and blocks
2952	Asphalt felts and coatings
299	Misc. Petroleum and Coal Products
2992	Lubricating oils and greases
2999	Petroleum and coal products, nec
30	RUBBER AND MISC. PLASTICS PRODUCTS
301	Tires and Inner Tubes
3011	Tires and inner tubes
302	Rubber and Plastics Footwear
3021	Rubber and plastics footwear
305	Hose & Belting & Gaskets & Packing
3052	Rubber & plastics hose & belting
3053	Gaskets, packing and sealing devices
306	Fabricated Rubber Products, NEC
3061	Mechanical rubber goods
3069	Fabricated rubber products, nec
308	Miscellaneous Plastics Products, NEC
3081	Unsupported plastics film & sheet
3082	Unsupported plastics profile shapes
3083	Laminated plastics plate & sheet
3084	Plastics pipe
3085	Plastics bottles
3086	Plastics foam products
3087	Custom compound purchased resins
3088	Plastics plumbing fixtures
3089	Plastics products, nec
31	LEATHER AND LEATHER PRODUCTS
311	Leather Tanning and Finishing
3111	Leather tanning and finishing
313	Footwear Cut Stock
3131	Footwear cut stock
314	Footwear, Except Rubber
3142	House slippers
3143	Men's footwear, except athletic
3144	Women's footwear, except athletic
3149	Footwear, except rubber, nec
315	Leather Gloves and Mittens
3151	Leather gloves and mittens
316	Luggage
3161	Luggage
317	Handbags and Personal Leather Goods
3171	Women's handbags and purses
3172	Personal leather goods, nec
319	Leather Goods, NEC
3199	Leather goods, nec

<i>Code</i>	<i>Short Title</i>
32	STONE, CLAY, AND GLASS PRODUCTS
321	Flat Glass
3211	Flat glass
322	Glass and Glassware, Pressed or Blown
3221	Glass containers
3229	Pressed and blown glass, nec
323	Products of Purchased Glass
3231	Products of purchased glass
324	Cement, Hydraulic
3241	Cement, hydraulic
325	Structural Clay Products
3251	Brick and structural clay tile
3253	Ceramic wall and floor tile
3255	Clay refractories
3259	Structural clay products, nec
326	Pottery and Related Products
3261	Vitreous plumbing fixtures
3262	Vitreous china table & kitchenware
3263	Semivitreous table & kitchenware
3264	Porcelain electrical supplies
3269	Pottery products, nec
327	Concrete, Gypsum, and Plaster Products
3271	Concrete block and brick
3272	Concrete products, nec
3273	Ready-mixed concrete
3274	Lime
3275	Gypsum products
328	Cut Stone and Stone Products
3281	Cut stone and stone products
329	Misc. Nonmetallic Mineral Products
3291	Abrasive products
3292	Asbestos products
3295	Minerals, ground or treated
3296	Mineral wool
3297	Nonclay refractories
3299	Nonmetallic mineral products, nec
33	PRIMARY METAL INDUSTRIES
331	Blast Furnace and Basic Steel Products
3312	Blast furnaces and steel mills
3313	Electrometallurgical products
3315	Steel wire and related products
3316	Cold finishing of steel shapes
3317	Steel pipe and tubes
332	Iron and Steel Foundries
3321	Gray and ductile iron foundries
3322	Malleable iron foundries
3324	Steel investment foundries
3325	Steel foundries, nec
333	Primary Nonferrous Metals
3331	Primary copper
3334	Primary aluminum

<i>Code</i>	<i>Short Title</i>
3339	Primary nonferrous metals, nec
334	Secondary Nonferrous Metals
3341	Secondary nonferrous metals
335	Nonferrous Rolling and Drawing
3351	Copper rolling and drawing
3353	Aluminum sheet, plate, and foil
3354	Aluminum extruded products
3355	Aluminum rolling and drawing, nec
3356	Nonferrous rolling and drawing, nec
3357	Nonferrous wiredrawing & insulating
336	Nonferrous Foundries (Castings)
3363	Aluminum die-castings
3364	Nonferrous die-casting exc. aluminum
3365	Aluminum foundries
3366	Copper foundries
3369	Nonferrous foundries, nec
339	Miscellaneous Primary Metal Products
3398	Metal heat treating
3399	Primary metal products, nec
34	FABRICATED METAL PRODUCTS
341	Metal Cans and Shipping Containers
3411	Metal cans
3412	Metal barrels, drums, and pails
342	Cutlery, Handtools, and Hardware
3421	Cutlery
3423	Hand and edge tools, nec
3425	Saw blades and handsaws
3429	Hardware, nec
343	Plumbing and Heating, Except Electric
3431	Metal sanitary ware
3432	Plumbing fixture fittings and trim
3433	Heating equipment, except electric
344	Fabricated Structural Metal Products
3441	Fabricated structural metal
3442	Metal doors, sash, and trim
3443	Fabricated plate work (boiler shops)
3444	Sheet metal work
3446	Architectural metal work
3448	Prefabricated metal buildings
3449	Miscellaneous metal work
345	Screw Machine Products, Bolts, Etc.
3451	Screw machine products
3452	Bolts, nuts, rivets, and washers
346	Metal Forgings and Stampings
3462	Iron and steel forgings
3463	Nonferrous forgings
3465	Automotive stampings
3466	Crowns and closures
3469	Metal stampings, nec
347	Metal Services, NEC
3471	Plating and polishing
3479	Metal coating and allied services

<i>Code</i>	<i>Short Title</i>
348	Ordnance and Accessories, NEC
3482	Small arms ammunition
3483	Ammunition, exc. for small arms, nec
3484	Small arms
3489	Ordnance and accessories, nec
349	Misc. Fabricated Metal Products
3491	Industrial valves
3492	Fluid power valves & hose fittings
3493	Steel springs, except wire
3494	Valves and pipe fittings, nec
3495	Wire springs
3496	Misc. fabricated wire products
3497	Metal foil and leaf
3498	Fabricated pipe and fittings
3499	Fabricated metal products, nec
35	INDUSTRIAL MACHINERY AND EQUIPMENT
351	Engines and Turbines
3511	Turbines and turbine generator sets
3519	Internal combustion engines, nec
352	Farm and Garden Machinery
3523	Farm machinery and equipment
3524	Lawn and garden equipment
353	Construction and Related Machinery
3531	Construction machinery
3532	Mining machinery
3533	Oil and gas field machinery
3534	Elevators and moving stairways
3535	Conveyors and conveying equipment
3536	Hoists, cranes, and monorails
3537	Industrial trucks and tractors
354	Metalworking Machinery
3541	Machine tools, metal cutting types
3542	Machine tools, metal forming types
3543	Industrial patterns
3544	Special dies, tools, jigs & fixtures
3545	Machine tool accessories
3546	Power-driven handtools
3547	Rolling mill machinery
3548	Welding apparatus
3549	Metalworking machinery, nec
355	Special Industry Machinery
3552	Textile machinery
3553	Woodworking machinery
3554	Paper industries machinery
3555	Printing trades machinery
3556	Food products machinery
3559	Special industry machinery, nec
356	General Industrial Machinery
3561	Pumps and pumping equipment
3562	Ball and roller bearings
3563	Air and gas compressors

<i>Code</i>	<i>Short Title</i>
3564	Blowers and fans
3565	Packaging machinery
3566	Speed changers, drives, and gears
3567	Industrial furnaces and ovens
3568	Power transmission equipment, nec
3569	General industrial machinery, nec
357	Computer and Office Equipment
3571	Electronic computers
3572	Computer storage devices
3575	Computer terminals
3577	Computer peripheral equipment, nec
3578	Calculating and accounting equipment
3579	Office machines, nec
358	Refrigeration and Service Machinery
3581	Automatic vending machines
3582	Commercial laundry equipment
3585	Refrigeration and heating equipment
3586	Measuring and dispensing pumps
3589	Service industry machinery, nec
359	Industrial Machinery, NEC
3592	Carburetors, pistons, rings, valves
3593	Fluid power cylinders & actuators
3594	Fluid power pumps and motors
3596	Scales and balances, exc. laboratory
3599	Industrial machinery, nec
36	ELECTRONIC & OTHER ELECTRIC EQUIPMENT
361	Electric Distribution Equipment
3612	Transformers, except electronic
3613	Switchgear and switchboard apparatus
362	Electrical Industrial Apparatus
3621	Motors and generators
3624	Carbon and graphite products
3625	Relays and industrial controls
3629	Electrical industrial apparatus, nec
363	Household Appliances
3631	Household cooking equipment
3632	Household refrigerators and freezers
3633	Household laundry equipment
3634	Electric housewares and fans
3635	Household vacuum cleaners
3639	Household appliances, nec
364	Electric Lighting and Wiring Equipment
3641	Electric lamps
3643	Current-carrying wiring devices
3644	Noncurrent-carrying wiring devices
3645	Residential lighting fixtures
3646	Commercial lighting fixtures
3647	Vehicular lighting equipment
3648	Lighting equipment, nec
365	Household Audio and Video Equipment
3651	Household audio and video equipment

<i>Code</i>	<i>Short Title</i>
3652	Prerecorded records and tapes
366	Communications Equipment
3661	Telephone and telegraph apparatus
3663	Radio & TV communications equipment
3669	Communications equipment, nec
367	Electronic Components and Accessories
3671	Electron tubes
3672	Printed circuit boards
3674	Semiconductors and related devices
3675	Electronic capacitors
3676	Electronic resistors
3677	Electronic coils and transformers
3678	Electronic connectors
3679	Electronic components, nec
369	Misc. Electrical Equipment & Supplies
3691	Storage batteries
3692	Primary batteries, dry and wet
3694	Engine electrical equipment
3695	Magnetic and optical recording media
3699	Electrical equipment & supplies, nec
37	TRANSPORTATION EQUIPMENT
371	Motor Vehicles and Equipment
3711	Motor vehicles and car bodies
3713	Truck and bus bodies
3714	Motor vehicle parts and accessories
3715	Truck trailers
3716	Motor homes
372	Aircraft and Parts
3721	Aircraft
3724	Aircraft engines and engine parts
3728	Aircraft parts and equipment, nec
373	Ship and Boat Building and Repairing
3731	Ship building and repairing
3732	Boat building and repairing
374	Railroad Equipment
3743	Railroad equipment
375	Motorcycles, Bicycles, and Parts
3751	Motorcycles, bicycles, and parts
376	Guided Missiles, Space Vehicles, Parts
3761	Guided missiles and space vehicles
3764	Space propulsion units and parts
3769	Space vehicle equipment, nec
379	Miscellaneous Transportation Equipment
3792	Travel trailers and campers
3795	Tanks and tank components
3799	Transportation equipment, nec
38	INSTRUMENTS AND RELATED PRODUCTS
381	Search and Navigation Equipment
3812	Search and navigation equipment

<i>Code</i>	<i>Short Title</i>
382	Measuring and Controlling Devices
3821	Laboratory apparatus and furniture
3822	Environmental controls
3823	Process control instruments
3824	Fluid meters and counting devices
3825	Instruments to measure electricity
3826	Analytical instruments
3827	Optical instruments and lenses
3829	Measuring & controlling devices, nec
384	Medical Instruments and Supplies
3841	Surgical and medical instruments
3842	Surgical appliances and supplies
3843	Dental equipment and supplies
3844	X-ray apparatus and tubes
3845	Electromedical equipment
385	Ophthalmic Goods
3851	Ophthalmic goods
386	Photographic Equipment and Supplies
3861	Photographic equipment and supplies
387	Watches, Clocks, Watchcases & Parts
3873	Watches, clocks, watchcases & parts

<i>Code</i>	<i>Short Title</i>
39	MISCELLANEOUS MANUFACTURING INDUSTRIES
391	Jewelry, Silverware, and Plated Ware
3911	Jewelry, precious metal
3914	Silverware and plated ware
3915	Jewelers' materials & lapidary work
393	Musical Instruments
3931	Musical instruments
394	Toys and Sporting Goods
3942	Dolls and stuffed toys
3944	Games, toys, and children's vehicles
3949	Sporting and athletic goods, nec
395	Pens, Pencils, Office, & Art Supplies
3951	Pens and mechanical pencils
3952	Lead pencils and art goods
3953	Marking devices
3955	Carbon paper and inked ribbons
396	Costume Jewelry and Notions
3961	Costume jewelry
3965	Fasteners, buttons, needles, & pins
399	Miscellaneous Manufactures
3991	Brooms and brushes
3993	Signs and advertising specialties
3995	Burial caskets
3996	Hard surface floor coverings, nec
3999	Manufacturing industries, nec

E. TRANSPORTATION AND PUBLIC UTILITIES

<i>Code</i>	<i>Short Title</i>
40	RAILROAD TRANSPORTATION
401	Railroads
4011	Railroads, line-haul operating
4013	Switching and terminal services

<i>Code</i>	<i>Short Title</i>
442	Deep Sea Domestic Trans. of Freight
4424	Deep sea domestic trans. of freight
443	Freight Trans. on the Great Lakes
4432	Freight trans. on the Great Lakes
444	Water Transportation of Freight, NEC
4449	Water transportation of freight, nec
448	Water Transportation of Passengers
4481	Deep sea passenger trans., ex. ferry
4482	Ferries
4489	Water passenger transportation, nec
449	Water Transportation Services
4491	Marine cargo handling
4492	Towing and tugboat service
4493	Marinas
4499	Water transportation services, nec
45	TRANSPORTATION BY AIR
451	Air Transportation, Scheduled
4512	Air transportation, scheduled
4513	Air courier services
452	Air Transportation, Nonscheduled
4522	Air transportation, nonscheduled
458	Airports, Flying Fields, & Services
4581	Airports, flying fields, & services
46	PIPELINES, EXCEPT NATURAL GAS
461	Pipelines, Except Natural Gas
4612	Crude petroleum pipelines
4613	Refined petroleum pipelines
4619	Pipelines, nec
47	TRANSPORTATION SERVICES
472	Passenger Transportation Arrangement
4724	Travel agencies
4725	Tour operators
4729	Passenger transport arrangement, nec
473	Freight Transportation Arrangement
4731	Freight transportation arrangement
474	Rental of Railroad Cars

<i>Code</i>	<i>Short Title</i>
4741	Rental of railroad cars
478	Miscellaneous Transportation Services
4783	Packing and crating
4785	Inspection & fixed facilities
4789	Transportation services, nec
48	COMMUNICATIONS
481	Telephone Communications
4812	Radiotelephone communications
4813	Telephone communications, exc. radio
482	Telegraph & Other Communications
4822	Telegraph & other communications
483	Radio and Television Broadcasting
4832	Radio broadcasting stations
4833	Television broadcasting stations
484	Cable and Other Pay TV Services
4841	Cable and other pay TV services
489	Communications Services, NEC
4899	Communications services, nec
49	ELECTRIC, GAS, AND SANITARY SERVICES
491	Electric Services
4911	Electric services
492	Gas Production and Distribution
4922	Natural gas transmission
4923	Gas transmission and distribution
4924	Natural gas distribution
4925	Gas production and/or distribution
493	Combination Utility Services
4931	Electric and other services combined
4932	Gas and other services combined
4939	Combination utilities, nec
494	Water Supply
4941	Water supply
495	Sanitary Services
4952	Sewerage systems
4953	Refuse systems
4959	Sanitary services, nec
496	Steam and Air-Conditioning Supply
4961	Steam and air-conditioning supply
497	Irrigation Systems
4971	Irrigation systems

F. WHOLESALE TRADE

<i>Code</i>	<i>Short Title</i>
50	WHOLESALE TRADE—DURABLE GOODS
501	Motor Vehicles, Parts, and Supplies

<i>Code</i>	<i>Short Title</i>
5012	Automobiles and other motor vehicles
5013	Motor vehicle supplies and new parts
5014	Tires and tubes
5015	Motor vehicle parts, used

<i>Code</i>	<i>Short Title</i>
502	Furniture and Homefurnishings
5021	Furniture
5023	Homefurnishings
503	Lumber and Construction Materials
5031	Lumber, plywood, and millwork
5032	Brick, stone, & related materials
5033	Roofing, siding, & insulation
5039	Construction materials, nec
504	Professional & Commercial Equipment
5043	Photographic equipment and supplies
5044	Office equipment
5045	Computers, peripherals & software
5046	Commercial equipment, nec
5047	Medical and hospital equipment
5048	Ophthalmic goods
5049	Professional equipment, nec
505	Metals and Minerals, Except Petroleum
5051	Metals service centers and offices
5052	Coal and other minerals and ores
506	Electrical Goods
5063	Electrical apparatus and equipment
5064	Electrical appliances, TV & radios
5065	Electronic parts and equipment
507	Hardware, Plumbing & Heating Equipment
5072	Hardware
5074	Plumbing & hydronic heating supplies
5075	Warm air heating & air-conditioning
5078	Refrigeration equipment and supplies
508	Machinery, Equipment, and Supplies
5082	Construction and mining machinery
5083	Farm and garden machinery
5084	Industrial machinery and equipment
5085	Industrial supplies
5087	Service establishment equipment
5088	Transportation equipment & supplies
509	Miscellaneous Durable Goods
5091	Sporting & recreational goods
5092	Toys and hobby goods and supplies
5093	Scrap and waste materials
5094	Jewelry & precious stones
5099	Durable goods, nec

<i>Code</i>	<i>Short Title</i>
51	WHOLESALE TRADE—NONDURABLE GOODS
511	Paper and Paper Products
5111	Printing and writing paper
5112	Stationery and office supplies
5113	Industrial & personal service paper
512	Drugs, Proprietaries, and Sundries
5122	Drugs, proprietaries, and sundries
513	Apparel, Piece Goods, and Notions
5131	Piece goods & notions
5136	Men's and boys' clothing
5137	Women's and children's clothing
5139	Footwear
514	Groceries and Related Products
5141	Groceries, general line
5142	Packaged frozen foods
5143	Dairy products, exc. dried or canned
5144	Poultry and poultry products
5145	Confectionery
5146	Fish and seafoods
5147	Meats and meat products
5148	Fresh fruits and vegetables
5149	Groceries and related products, nec
515	Farm-Product Raw Materials
5153	Grain and field beans
5154	Livestock
5159	Farm-product raw materials, nec
516	Chemicals and Allied Products
5162	Plastics materials & basic shapes
5169	Chemicals & allied products, nec
517	Petroleum and Petroleum Products
5171	Petroleum bulk stations & terminals
5172	Petroleum products, nec
518	Beer, Wine, and Distilled Beverages
5181	Beer and ale
5182	Wine and distilled beverages
519	Misc. Nondurable Goods
5191	Farm supplies
5192	Books, periodicals, & newspapers
5193	Flowers & florists' supplies
5194	Tobacco and tobacco products
5198	Paints, varnishes, and supplies
5199	Nondurable goods, nec

I. SERVICES

<i>Code</i>	<i>Short Title</i>	<i>Code</i>	<i>Short Title</i>
70	HOTELS AND OTHER LODGING PLACES	73	BUSINESS SERVICES
701	Hotels and Motels	731	Advertising
7011	Hotels and motels	7311	Advertising agencies
702	Rooming and Boarding Houses	7312	Outdoor advertising services
7021	Rooming and boarding houses	7313	Radio, TV, publisher representatives
703	Camps and Recreational Vehicle Parks	7319	Advertising, nec
7032	Sporting and recreational camps	732	Credit Reporting and Collection
7033	Trailer parks and campsites	7322	Adjustment & collection services
704	Membership-Basis Organization Hotels	7323	Credit reporting services
7041	Membership-basis organization hotels	733	Mailing, Reproduction, Stenographic
72	PERSONAL SERVICES	7331	Direct mail advertising services
721	Laundry, Cleaning, & Garment Services	7334	Photocopying & duplicating services
7211	Power laundries, family & commercial	7335	Commercial photography
7212	Garment pressing & cleaners' agents	7336	Commercial art and graphic design
7213	Linen supply	7338	Secretarial & court reporting
7215	Coin-operated laundries and cleaning	734	Services to Buildings
7216	Drycleaning plants, except rug	7342	Disinfecting & pest control services
7217	Carpet and upholstery cleaning	7349	Building maintenance services, nec
7218	Industrial launderers	735	Misc. Equipment Rental & Leasing
7219	Laundry and garment services, nec	7352	Medical equipment rental
722	Photographic Studios, Portrait	7353	Heavy construction equipment rental
7221	Photographic studios, portrait	7359	Equipment rental & leasing, nec
723	Beauty Shops	736	Personnel Supply Services
7231	Beauty shops	7361	Employment agencies
724	Barber Shops	7363	Help supply services
7241	Barber shops	737	Computer and Data Processing Services
725	Shoe Repair and Shoeshine Parlors	7371	Computer programming services
7251	Shoe repair and shoeshine parlors	7372	Prepackaged software
726	Funeral Service and Crematories	7373	Computer integrated systems design
7261	Funeral service and crematories	7374	Data processing and preparation
729	Miscellaneous Personal Services	7375	Information retrieval services
7291	Tax return preparation services	7376	Computer facilities management
7299	Miscellaneous personal services, nec	7377	Computer rental & leasing
		7378	Computer maintenance & repair
		7379	Computer related services, nec
		738	Miscellaneous Business Services
		7381	Detective & armored car services

<i>Code</i>	<i>Short Title</i>
7382	Security systems services
7383	News syndicates
7384	Photofinishing laboratories
7389	Business services, nec
75	AUTO REPAIR, SERVICES, AND PARKING
751	Automotive Rentals, No Drivers
7513	Truck rental and leasing, no drivers
7514	Passenger car rental
7515	Passenger car leasing
7519	Utility trailer rental
752	Automobile Parking
7521	Automobile parking
753	Automotive Repair Shops
7532	Top & body repair & paint shops
7533	Auto exhaust system repair shops
7534	Tire retreading and repair shops
7536	Automotive glass replacement shops
7537	Automotive transmission repair shops
7538	General automotive repair shops
7539	Automotive repair shops, nec
754	Automotive Services, Except Repair
7542	Carwashes
7549	Automotive services, nec
76	MISCELLANEOUS REPAIR SERVICES
762	Electrical Repair Shops
7622	Radio and television repair
7623	Refrigeration service and repair
7629	Electrical repair shops, nec
763	Watch, Clock, and Jewelry Repair
7631	Watch, clock, and jewelry repair
764	Reupholstery and Furniture Repair
7641	Reupholstery and furniture repair
769	Miscellaneous Repair Shops
7692	Welding repair
7694	Armature rewinding shops
7699	Repair services, nec

ATTACHMENT F

PROCESS LISTS

THE FOLLOWING IS A LIST OF PRODUCTION PROCESSES USED IN SOME INDUSTRIES WHICH WILL BE AFFECTED BY THE TOXIC USE REDUCTION ACT. THE INTENTION IN INCLUDING THESE LISTS IS TO SUPPLY EXAMPLES OF PROCESSES IN VARIOUS INDUSTRIES. A MORE INCLUSIVE LIST WILL BE DEVELOPED FOR THE REGULATIONS, WHICH WILL BE PUBLISHED IN JANUARY, 1992.

Chemical Coating

Electroplating

- Brass/Bronze

- Cadmium

- Chromium

- Copper

- Gold

- Nickel

- Rhodium

- Silver

- Tin

- Zinc

- Anodizing

- Barrel plating

- Conveyorized Plating

- Electroless Plating

- Electropolishing

- Plating on Aluminum

- Plating on Plastics

- Printed Circuits/Electronics

Painting

- Airless Spray

- Baking and Curing

- Catalyst Spray

- Coil Coat/Roller Coat

- Conveyorized Painting

- Dip Painting/Flow Coating

- Electrodeposition/Electrocoating

- Electrostatic Spray

- Printing on Plastics

- Powder Coating

- Radiation Curing

- Silk Screen/Spray Mask

- Spray Painting

Abrasive Blasting

Blackening

Chromate Coating

Cleaning and Pickling

Degreasing

Electroforming

Phosphatizing

Polishing/Buffing

Tumbling/Vibratory Finishing

Vacuum Coating

Metal Working

Assembly
Bending
Blanking, Punching, Stamping
Boring
Broaching
Ceramic Machining
Composite Machining
Deburring
Drilling
Extruding
Fastening
Forging or Heading
Gear Cutting or Rolling
Grinding
Heat Treating
Honing
Inspection
Lapping
Laser Machining
Milling
Plastic Machining
Robotics
Sawing
Screw or Automatic Machining
Shearing
Surface Finishing
Tapping or Threading
Transfer-Type Machining
Turning
Welding

Metal Finishing

Electroplating
Electroless Plating
Anodizing
Conversion Coating
Etching and Chemical Milling
Cleaning
Machining
Grinding
Polishing
Tumbling (Barrel Finishing)
Burnishing
Impact Deformation
Pressure Deformation
Shearing
Heat Treating
Thermal Cutting
Welding
Brazing
Soldering
Flame Spraying
Sand Blasting
Other Abrasive Jet Machining
Electrical Discharge Machining
Electrochemical Machining
Electron Beam Machining
Laser Beam Machining
Plasma Arc Machining
Ultrasonic Machining
Sintering
Laminating
Hot Dip Coating
Sputtering
Vapor Plating
Thermal Infusion
Salt Bath Descaling
Solvent Degreasing
Paint Stripping
Painting
Electrostatic Painting
Electropainting
Vaccum Metalizing
Assembly
Calibration
Testing
Mechanical Plating

Textile Mills

Wool Scouring
Wool Finishing
Dry Processing
Woven Fabric Finishing
Knit Fabric Finishing
Stock and Yarn Dyeing and Finishing

Soap Manufacture

Batch Kettle and Continuous
Fatty Acid Manufacture by Fat Splitting
Soap from Fatty Acid Neutralization
Glycerine Recovery
Glycerine Concentrate
Glycerine Distillation

Detergent Manufacture

Oleum Sulfonation and Sulfation (Batch and Continuous)
Air SO₃ Sulfation and Sulfonation (Batch and Continuous)
SO₃ Solvent and Vacuum Sulfonation
Sulfamic Acid Sulfation
Chlorosulfonic Acid Sulfation
Neutralization of Sulfuric Acid Esters and Sulfonic Acids

Metal Molding and Casting

Casting Cleaning
Casting Quench
Die Casting
Mold Cooling
Direct Chill Casting
Slag Quench
Wet Sand Reclamation

Rubber Production and Compounding

Heavy Monomer Separation
Light Monomer Separation
Monomer Inhibitor Removal
Polymerization Reactors
Vacuum Distillation
Steam Stripping
Coagulation and Screening
Crumb Rinsing and Dewatering
Drying
Baling
Banbury Rubber Mixing

Semiconductor Manufacturing

Silicon Compound Deposition
Application of Photoresist
UV Light Exposure
Developing
Deionized Water Rinse
Doping
Acid or Solvent Rinse
Metal Deposition
Passivation
Dicing Into Chips
Assembly
Oxidation
Photolithography
Etching/Stripping
Metallization
Photoresist Stripping
Wafer Cleaning

Leather Tanning and Finishing

Soaking
Fleshing
Unhairing
Bate
Pickle
Tan
Wring
Split and Shave
Retan
Bleaching and Coloring
Fat Liguoring
Setting Out
Drying
Trimming and Conditioning
Staking and Drymilling
Finishing and Coating

Printing

Prepress
Press Operations
Fountain Solution
Coating
Laquering
Blanket Wash
Press Wash
Finishing
Binding
Embossing
Foil Stamping
Thermography

Paper Coating

Solution Preparation
Mixing
Coating
Roll Coating
Cascade Coating
Roller Gravure Coating
Drying
Winding

Chemical (FROM OCPSF LIST)

Alkoxylation
Condensation
Halogenation
Oxidation
Polymerization
Hydrolysis
Hydrogenation
Esterification
Pyrolysis
Alkylation
Dehydrogenation
Amination (Ammonolysis)
Nitration
Sulfonation
Ammoxidation
Carbonylation
Hydrohalogenation
Dehydration
Dehydrohalogenation
Oxyhalogenation
Catalytic Cracking
Hydrodealkylation
Phosgenation
Extraction
Distillation
Hydration

